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C3

3. (Amended) A stereoscopic display device according to claim 1, wherein the light sources are positioned at the focal point of the mirror means to provide parallel beams.

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14. (Amended) A stereoscopic display device comprising:
a transmissive image reproducing element,
a light source means,
optical means to direct alternately the light emitted by light source means towards the right eye and towards the left eye, and
control means for displaying in synchronism with the direction of the light, alternately an image for the right eye and an image for the left eye on the image reproducing element,
said light source means comprising one single light source and the optical means comprising one single light source and the optical means comprising mirror means including movable mirror elements associated with mirror control means able to control the orientation of the mirror elements in such a way that each element has a first position and a second position, the first position directing the light towards the right eye when the image for the right eye is displayed on the transmissive image reproducing element, and the second position directing the light from the light source towards the left eye when the displayed image is for the left eye, the light source and the image reproducing element being installed on the same side of the mirror elements so that the light from the light source is directed to said mirror element and from said mirror elements to said image reproducing element.

REMARKS

The Office Action mailed February 13, 2001 has been carefully considered.

Amended claims 1, 3 and 14 are presented in their final form. A copy of pending claims 1, 3 and 14 with manuscript interlineations to show how the claims have been amended is appended.

Claim 3 has been recast in a manner that is clearly supported by the specification on page 5, lines 3-5. Amended claims 1 and 14 are supported by the specification and to not introduce new matter.

Amended claims 1, 3 and 14 address the rejections under 35 U.S.C. § 112, paragraphs 7-9 of the Action.

Claim 1 clearly recites that "the light sources and the image producing element are installed on the same side of the mirror means so that the light from said light source means is directed to said mirror means and from said mirror means to said image reproducing element". With these features, as noted in the specification on page 2, lines 13-16, a device according to the claimed invention presents a smaller volume than known devices.

In fact, in Woodgate et al., to obtain stereoscopic images, a voluminous system comprising two light sources (101a, 101b), a beam splitter (122), two mirrors (124, 123), two Fresnel lens (126, 125), two LCD (127, 128) and a beam combiner (129) is used. In this system, as described in column 8, lines 57 and following, the light rays modulated by the

LCD 127 and 128 are then combined by a beam combiner 129 such that an image formed on the LCD 127 is visible to the right eye of an observer and an image formed on the LCD 128 is visible to the left eye of the observer. In fact, in Woodgate et al., two mirrors and two LCD plus a beam splitter and a beam combiner are needed to obtain a stereoscopic effect. In the present invention as claimed in claim 1, only one mirror, one LCD and two light sources are needed to obtain the same effect, those elements being specifically positioned as mentioned in the claim.

As already mentioned in response to the first Office Action, in Eichenlaub, the autostereoscopic display comprises an illumination panel, a light valve 2, a lens and a focusing mirror 2. The lens 3 and the focusing mirror 3 realize a Fresnel mirror. So the illumination panel is on the opposite side of the mirror means. In this patent, the position of the various elements is such that the device is cumbersome. In addition, lens plus focusing mirror are needed and not only one mirror.

The Examiner cites Tandler et al. against claims 14-16. In fact, this patent uses DMD (Digital Mirror Device) in order to reproduce/display picture. However, in the present invention as claimed, a transmissive image reproducing element (LCD) is used for the above purpose. DMD (movable mirror array in Figure 5) is used only to focus ray from light source upon observer. In fact, Tandler et al. need special optics to observe the picture given by the DMD which is similar to a binocular (optics 51 and 52 in Figure 13 and also prisms P3 and P4 in Figures 14 and 15).

So, optical basis structures are different: light rays pass through:

- lamp →movable mirror →LCD →eyes (in the present invention).
- lamp →DMD →optics (mirror/prisms) →eyes (in Tandler et al.).

In view of the above amendments and comments, it is respectfully requested that the rejections be withdrawn and that the pending claims in the application be passed to issue.

A petition and fee for the extension of time are enclosed with this communication.


The Commissioner is hereby authorized to charge any other fees which may be required, or credit any overpayment, to Deposit Account No. 07-0832.

It is believed that no fee is due arising out of the claim amendments above. However, the Commissioner is hereby authorized to charge any other fees which may be required, or credit any overpayment, to Deposit Account No. 07-0832.

Respectfully submitted,

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IN THE ABSTRACT

Please substitute the enclosed Abstract for the one now on file.

IN THE DRAWINGS

Applicant respectfully requests that the requirement for drawing corrections in the Notice of Draftperson's Patent drawing Review be deferred until notification of allowable subject matter is received..

IN THE CLAIMS

Please amend the claims as follows:

--1. (Amended) A stereoscopic display device comprising a transmissive image reproducing element, a light source means including a light source and another light source, optical means to direct the light emitted by said ~~light~~ light source towards the right eye and to direct the light emitted by said ~~other~~ other light source towards the left eye, and control means for displaying alternately an image for the right eye and an image for the left eye on the image reproducing element, and for activating ^{in synchronism with the reproduction of the image} [the] ~~a~~ source emitting light for the right eye only when the image for the right eye is displayed and ~~for activating~~ [the] ^{the} source emitting light for the left eye only when the displayed image is for the left eye, ~~wherein~~ ^{further comprising} said ~~optical~~ optical means ^{is} ~~is~~ formed of ~~comprising~~ mirror means and the light sources and the image reproducing element are installed on the same side of the mirror means, ^{that the light from said light source means is directed to said mirror means and from said mirror means to said image reproducing element.} ~~so that the light from said light source means is directed to said mirror means and from said mirror means to said image reproducing element.~~

3. (Amended) A stereoscopic display device according to claim 1, wherein the mirror means provide parallel beams towards the eyes. --

the light sources are positioned at the focal point of the mirror means to provide parallel beams

--9. (Amended) A stereoscopic display device according to claim 1, characterized in that the mirror means form cylindrical mirror means or [ellipsoïde] ellipsoidal-paraboloid mirror means. --

--14. (Amended) A stereoscopic display device comprising a transmissive image reproducing element, a light source means, optical means to direct ^{alternately} the light emitted by light source means towards the right eye and towards the left eye, and control means for displaying ^{in synchronism with the direction of the light,} alternately an image for the right eye and an image for the left eye on the image reproducing element, characterized in that ~~the~~ ^{the} said light source means comprises ^{one} single light source and ~~in that~~ the optical means comprise ^{including} mirror means comprising movable mirror elements associated with mirror control means able to control the orientation of the mirror elements in such a way that each element has a first position and a second ~~positions~~ position, the first position directing the light towards the right eye when the image for the right eye is displayed on the transmissive image reproducing element, and the second position directing the light from the light source towards the left eye when the displayed image is for the left eye. *The light source and the image reproducing element being installed on the same side of the mirror ~~means~~ ^{element} and the mirror & that the light from the light source is directed to said mirror ^{element} and from said mirror ^{element} to said image reproducing element.*

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